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BOOK REVIEW

Horses Through The Ages

Marjan Mashkour (ed), Equids in Time and Space: Papers in Honour of Véra Eisenmann. Oxford: Oxbow Books. 2006. 240 pp., $90.00 (cloth). ISBN 10-1-84217-125-9

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Honoring a renowned specialist in studies of ancient horses, *Equids in Time and Space: Papers in Honour of Véra Eisenmann* edited by Marjan Mashkour includes 18 chapters by 22 international paleontologists, archaeologists, anatomists, historians, and other experts on living and extinct *Equus* and related horse relatives. There is also an introduction providing a brief review of Dr. Eisenmann's life and career. The volume is not without some substantial flaws, but remains a useful acquisition for anyone interested in the history and prehistory of these important animals.

The book is hardcover and oversize. Typeface is generally clean and sharp; figures are grayscale and of varying quality, depending upon the author(s). The volume is divided into five more or less equally-weighted sections: geographic distribution, Paleolithic horses, domestication, methodology, and anthropozoology. Equids earlier than the latest Tertiary and Quaternary are not discussed in any detail, reflecting Dr. Eisenmann's focus on more geologically recent horses. The investigative approaches employed are extremely diverse, including historic and paleontologic literature reviews, interpretations of old and new metric indices, uni- and multivariate statistical analyses, and assessments of stable isotope chemistry in fossil equid teeth.

The four papers comprising the geographic distribution portion of the volume demonstrate the diversity of investigative methods employed. Deng reviews late Pleistocene Przewalski's horses from China, using carbon isotopes from dental enamel to suggest that Przewalski's horses, as arid-adapted animals, can be used to track the waxing and waning of the East Asian monsoon through time. Foronova examines numerous late Pleistocene sites in southern Siberia, determining through dental morphology and morphometric analyses of metapodials that caballine and hemionine horses were all present in the region, but in varying abundance through time depending upon local climate. Pichardo reviews the published literature on late Pleistocene horses from North and South America; this study is unfortunately hampered by an unfocused presentation and an incomplete selection of reference works [several important

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reviews of Pleistocene horse taxonomy, including Savage (1951) and Winans (1989), are not cited]. Reynolds and Bishop examine craniodental variability in modern and fossil plains zebras, demonstrating that modern plains zebras from East Africa are smaller than southern African conspecifics as well as fossil East African zebras. The authors interpret these differences to be potentially related to changes in climate.

Only two papers make up the section on horses from the Paleolithic. Burke advances a paleoethological model for the extinct species *Equus hydruntinus*, using the behavior of extant, phylogenetically-similar Asiatic asses as a proxy, and suggests this model may prove useful in predicting the hunting behavior of Neanderthal hunters. The other paper in this section, Turner's study of horse remains dating to the Magdalenian period from the famous Solutré site in France, is a real gem, laden with a wealth of hard data on skeletal representation, age structure, season of death, and bone modification. She demonstrates convincingly that the Solutré horses were hunted from February to September, that processing by humans was minimal while carnivoran utilization was far more prevalent, and that the bulk of the bones were left at the site rather than being transported. She concludes that the horses were likely ambushed while following a migratory trail, rather than being driven into a kill zone as has been previously proposed.

The section of the volume on domestication, husbandry, and breeding is made up of four papers. Benecke discusses an early period of domestic horse use on the southern Balkan Peninsula, based upon remains from two Bronze Age sites at Kýrklareli-Kanlýgeçit. Radiocarbon dates from recovered horse bones places them at more than 3,900 years before present, some of the earliest records of horses from the southern Balkans. Vila presents morphologic and metric data on equids from Syria, reviewing the advent of horse burials in this region in the third millennium. This study contains numerous tables with a wealth of metric data; however, measurements in the tables are numbered, not defined. Because the chapter lacks a methods section or any discussion of which measurements of postcranial bones were acquired, the abundant data presented are essentially useless. Yuan and Flad examine horses from the latest Pleistocene onwards into historic times in China, documenting the transition from infrequent fossil remains to the appearance of largely-complete skeletal remains in horse chariot burial pits during the later Shang Period. Like the study by Benecke on horses on the Balkan Peninsula, Yuan and Flad interpret the record from China to indicate that horses were not domesticated locally. Schreiber and Zimmermann compare the foaling seasonality of zoo-living onagers and kulans, based upon available studbook records, and conclude that genetics do not figure prominently in the observed delay in the foaling of onagers relative to kulans.

The largest section of the volume, "Methodological issues," contains five separate studies, including one authored by the honoree of the book, Dr. Eisenmann, as well as another paper that she coauthored. The first chapter, Bartosiewicz's review of live body measurements acquired during World War II from unimproved horses in the Eastern Carpathians, is a wonderful presentation of rare body conformation data from a time before cross-breeding diluted the ancestral stock; however, this paper would seemingly have worked better in the previous domestication and husbandry section. Bignon and Eisenmann examine metric data from European Late Glacial horse fossils, demonstrating that wild horses in different geographic areas possess similar hoof conformation despite regional differences in topography, although they have distinctly different metapodial proportions. The metapodial data suggest regional fragmentation of horse populations during re-colonization of de-glaciated areas, with diversity being higher to the north (e.g., in the Paris Basin). Eisenmann's chapter advances the new "Palatal Index," which she contends is more reliable than earlier indices for discriminating caballine horse skulls from those of other equids. Although her dataset is massive and her

arguments are persuasive, her taxonomy depends to some degree on earlier, questionable taxonomic reviews (e.g., Azzaroli 1998) and suffers as a consequence. For example, she notes that the species *Equus excelsus* was considered a nomen vanum by Savage (1951), yet accepts Azzaroli's (1998) assignment of a skull from Hay Springs, Nebraska to this species, concluding (p. 81) that "*E. excelsus* is not a Caballine. It is probably related to *E. occidentalis*." The uninitiated will have difficulty deciphering how to proceed with this taxon, and others cited in the chapter, irrespective of the value of the new index.

In the next chapter of this section, Johnstone presents a multivariate analysis of modern and archaeological horse remains, suggesting that certain suites of measurements from radii, tibiae, and metatarsals can be used to accurately distinguish among horses, asses, and mules. Levine weighs in with the final chapter in this section, an archaeologist's take on recent genetic studies pertaining to horse domestication. Levine argues that the complexity of the domestication process, as evidenced by the intricacies of the mitochondrial DNA phylogenetic network, likely rejects previous hypotheses on the advent of domestication—specifically those hypotheses suggesting either a geographically and/or temporally restricted origin, or a "multiple founders" origination.

The final section of the book presents three studies on the anthropozoology of equids. Antikas documents the practice of cremating nobles with their horses in Macedonia, which appears to have been utilized for over a millennium of Greek history. Antunes relates the history of the extinct *zebro* in Portugal and the Iberian Peninsula, which he interprets to actually be *Equus hydruntinus*, and uses skeletal remains, toponymy, and a review of historical literature to flesh out the prehistory of this form. Finally, von den Driesch and Weidenhöfer briefly discuss laminitis in Roman horses from southern Germany, documenting that knowledge of this disease was extensive in antiquity—although, then as now, understanding was one thing and treatment was quite another.

In summary, *Equids in Time and Space: Papers in Honour of Véra Eisenmann* offers a little something for anyone with a professional interest in horses through the ages. Paleontologists, archaeologists, biologists, historians, and even linguists will find information of relevance, although admittedly not everyone will necessarily connect with every paper.

Unfortunately, the book suffers from very poor editing. There are numerous formatting inconsistencies and typographical errors, and little effort appears to have been made at cohesion among the papers (e.g., Przewalski's horses are cited as "*Equus przewalskii* Poljakoff" in some chapters, but as "*Equus przewalskyi* Poliakof" elsewhere). Sentence phrasing is often awkward if not virtually incomprehensible. This latter challenge is to some extent understandable, if unfortunate in a volume priced at $90.00 (£45.00); although the volume is part of a British series, the scope is international, and many of the authors are not English-first writers. But other errors, including one reference section with half the references omitted (in Dr. Eisenmann's chapter, no less) and even misspelling of contributing authors' names, are simply inexcusable. It is a shame that a volume intended to honor so deserving a world-respected researcher should be so marred by such an inattentive and careless presentation. Despite these flaws, I would recommend this volume to interested researchers.

References

Azzaroli A (1998) The genus *Equus* in North America: the Pleistocene species. Palaeontogr Ital 85:1–60

Savage DE (1951) Late Cenozoic vertebrates of the San Francisco Bay region. University of California Bulletin of the Department of Geological Sciences 28:215–314

Winans MC (1989) A quantitative study of North American fossil species of the genus *Equus*. In: Prothero DR, Schoch RM (eds) The evolution of perissodactyls. Oxford University Press, Oxford, pp 262–297